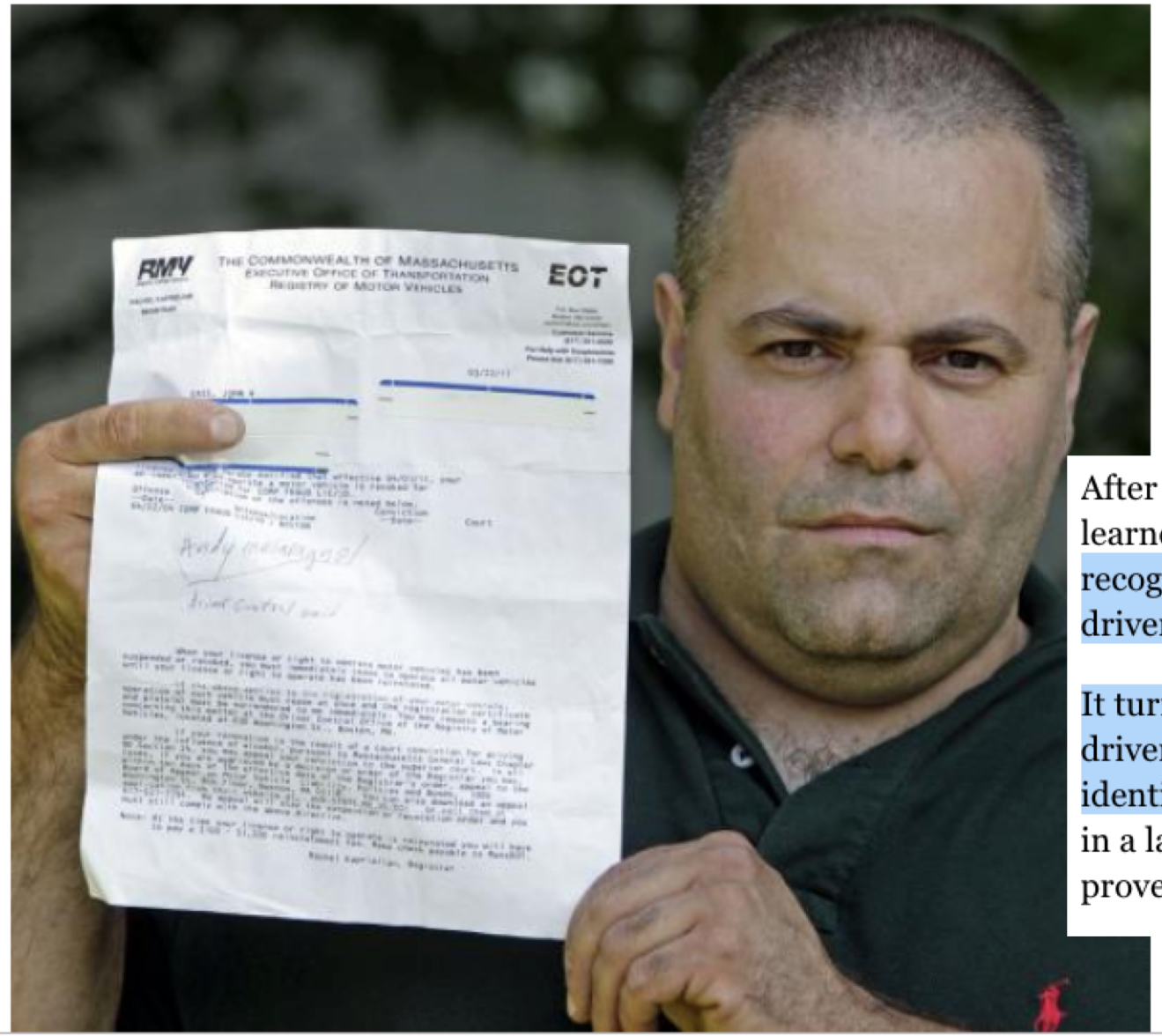
Face Recognition in Operation:
Consequences of differential impacts

Clare Garvie, Center on Privacy & Technology, Georgetown Law

The Boston Globe

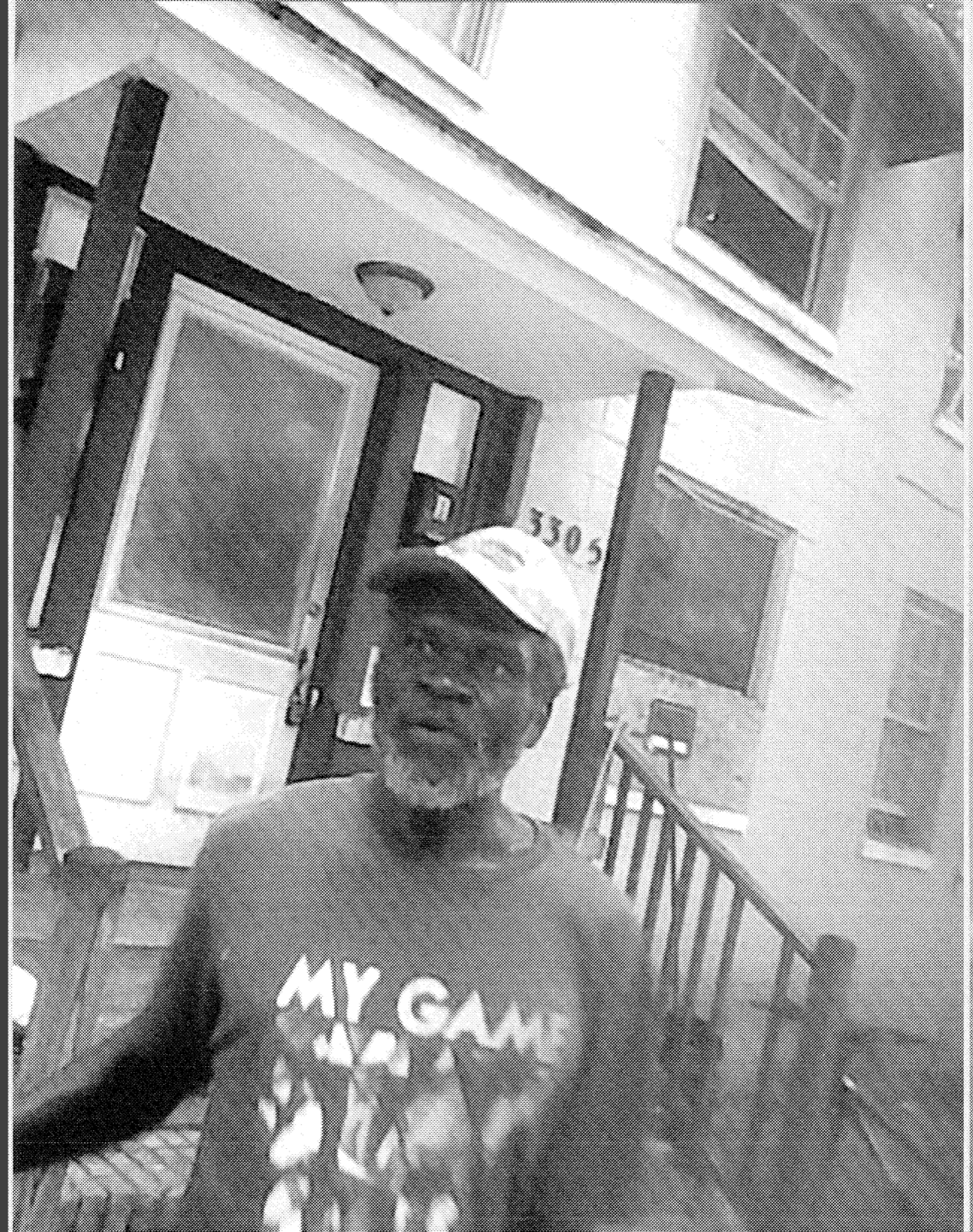
Caught in a dragnet

A fraud prevention system erroneously revoked his license, and now he's suing for his hardship



After frantic calls and a hearing with Registry officials, Gass learned the problem: An antiterrorism computerized facial recognition system that scans a database of millions of state driver's license images had picked his as a possible fraud.

It turned out Gass was flagged because he looks like another driver, not because his image was being used to create a fake identity. His driving privileges were returned but, he alleges in a lawsuit, only after 10 days of bureaucratic wrangling to prove he is who he says he is.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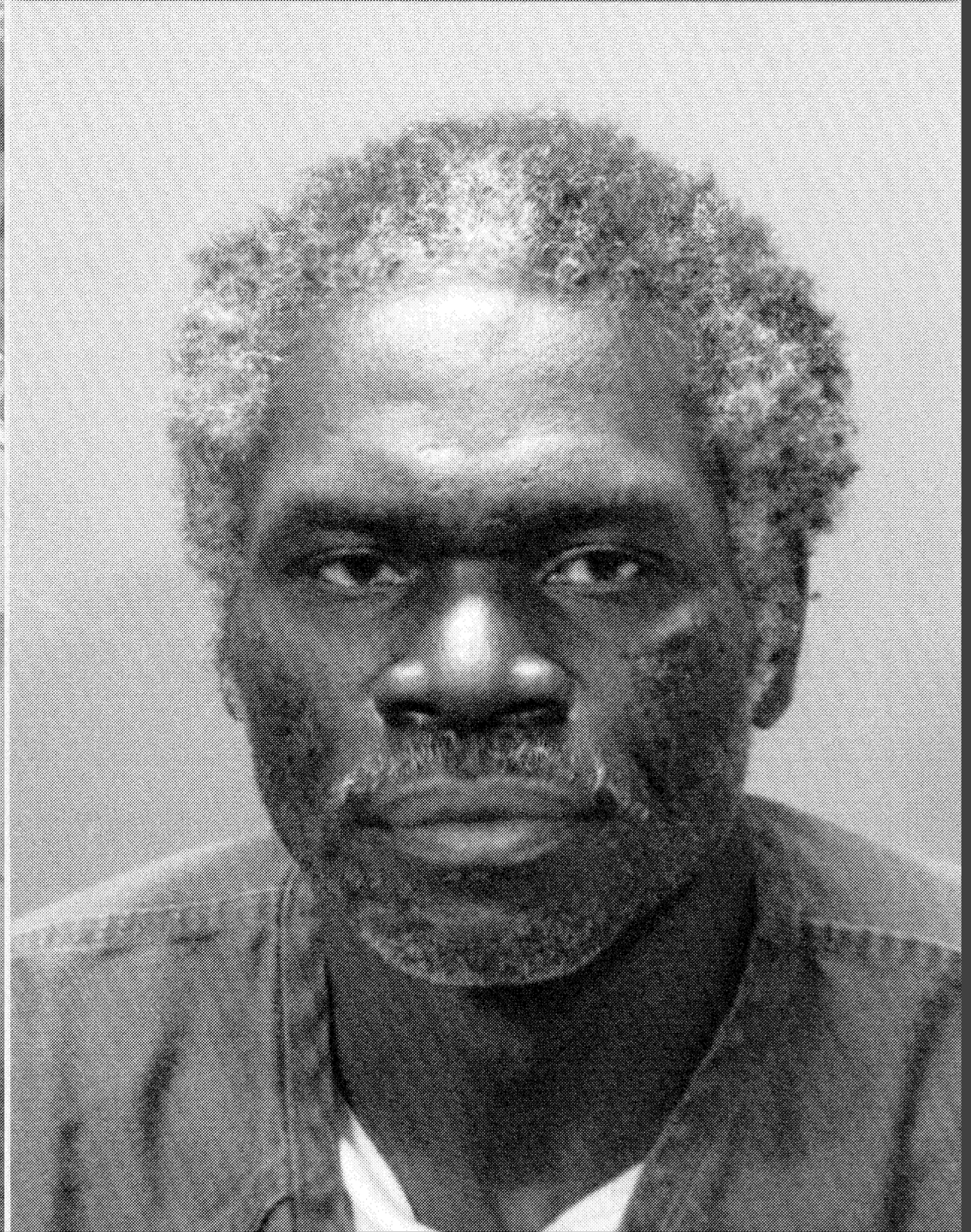
MY GAM



Risk: Discriminatory surveillance

Gender

Men twice as likely to be targeted.

15% of women targeted for voyeuristic reasons

Age

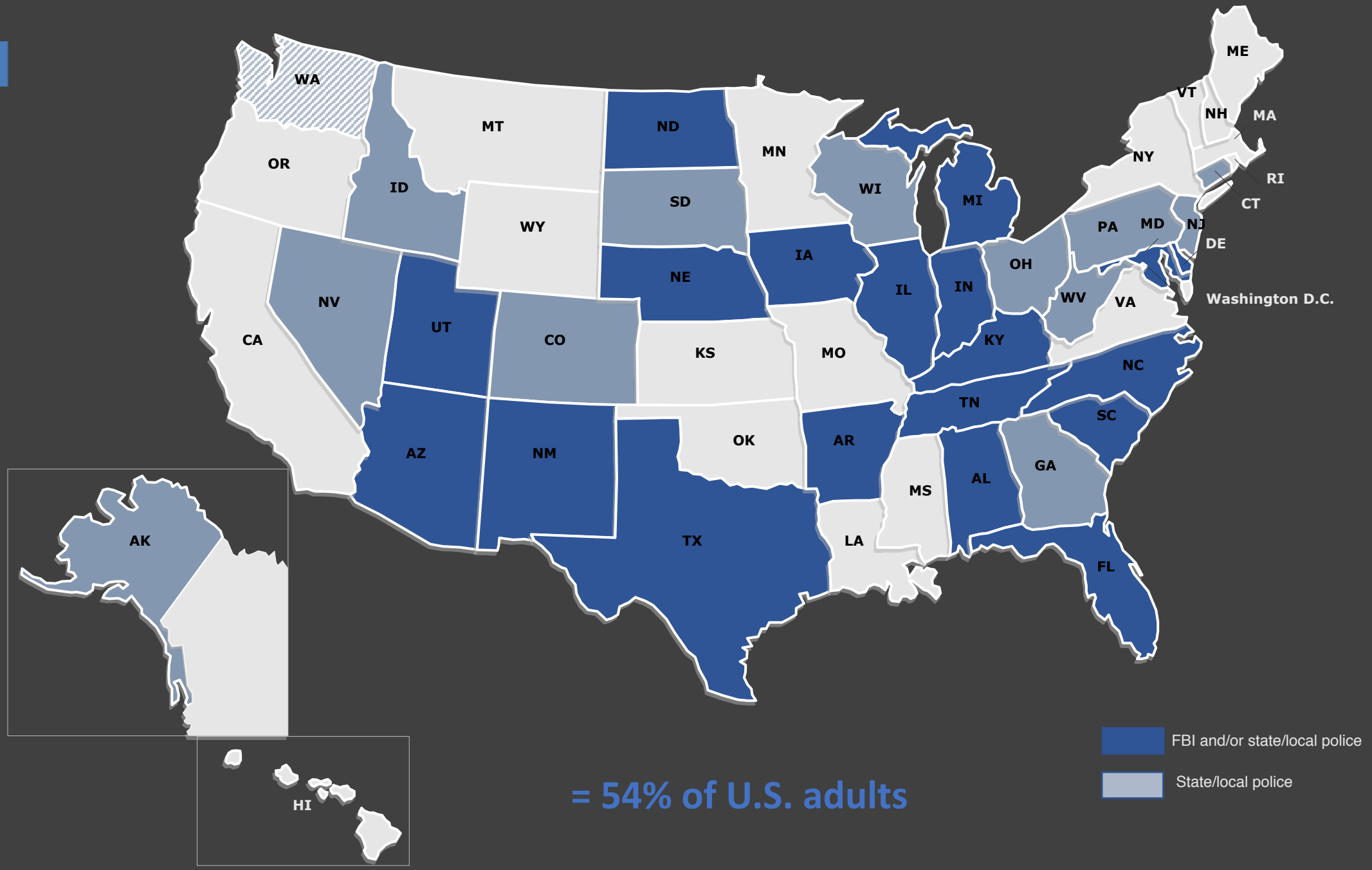
65% of teenagers targeted for no reason

Race

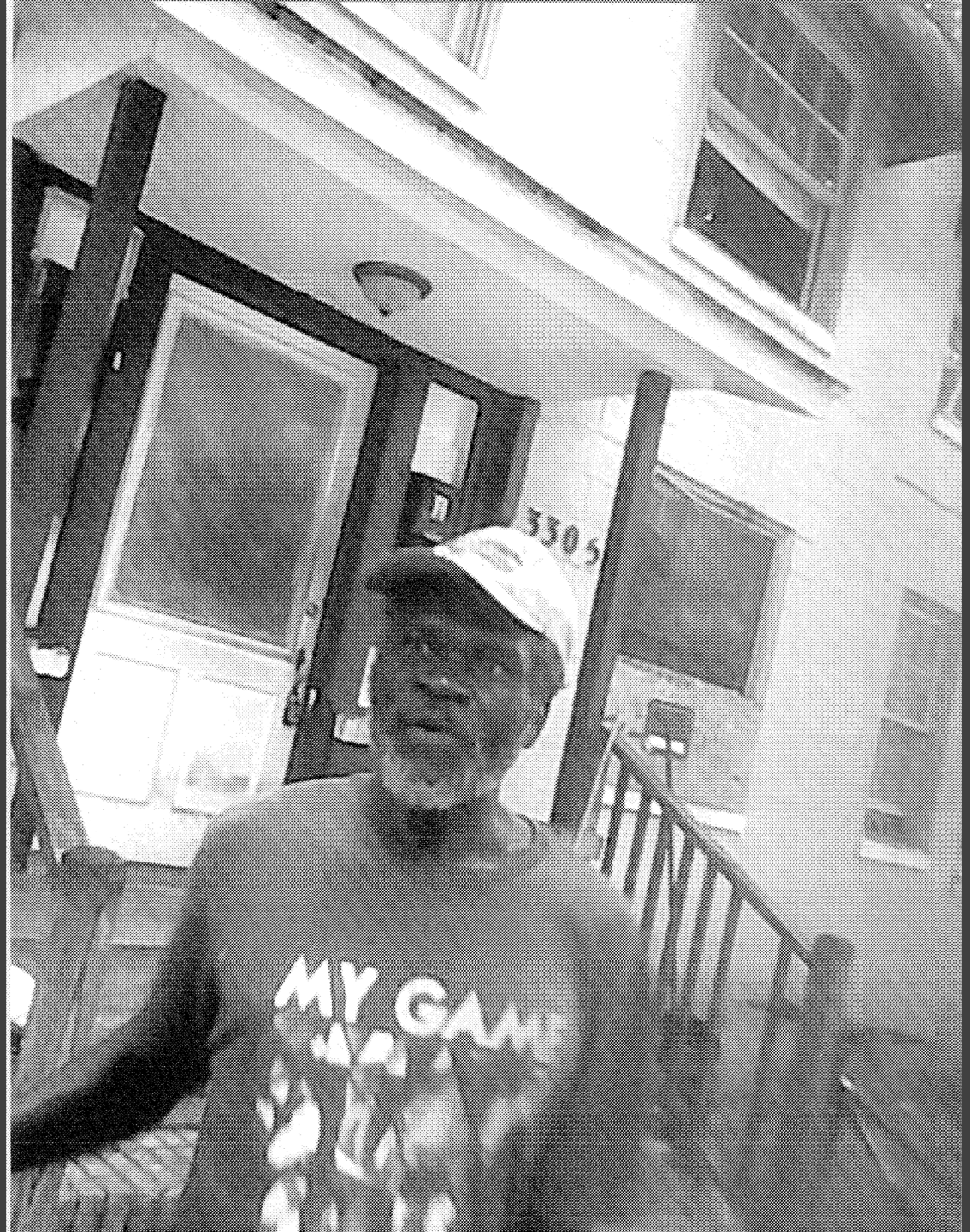
People of color were between 1.5 and 2.5 times more likely to be targeted than expected by presence in population

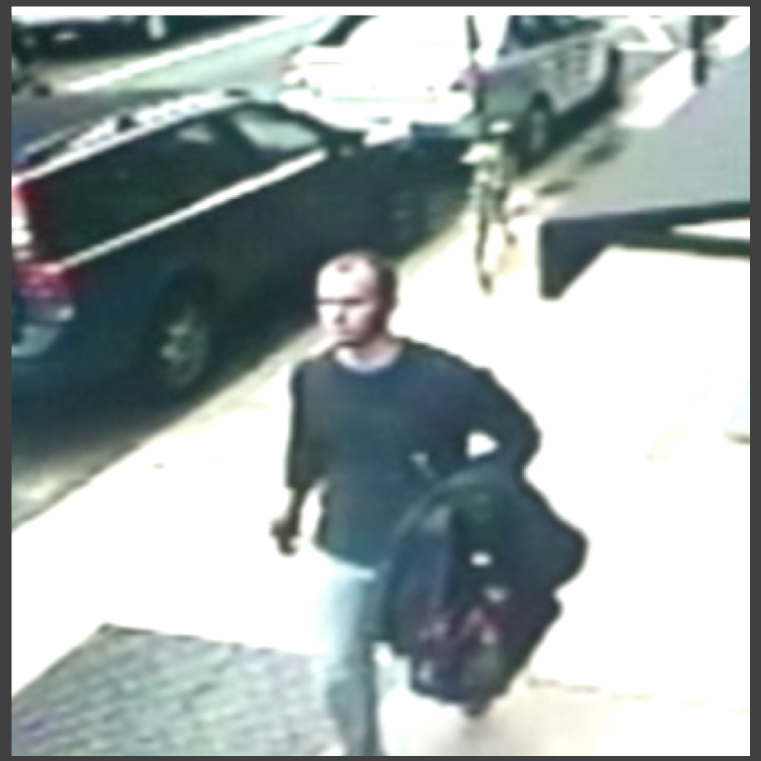
Arrest to Population Ratios:

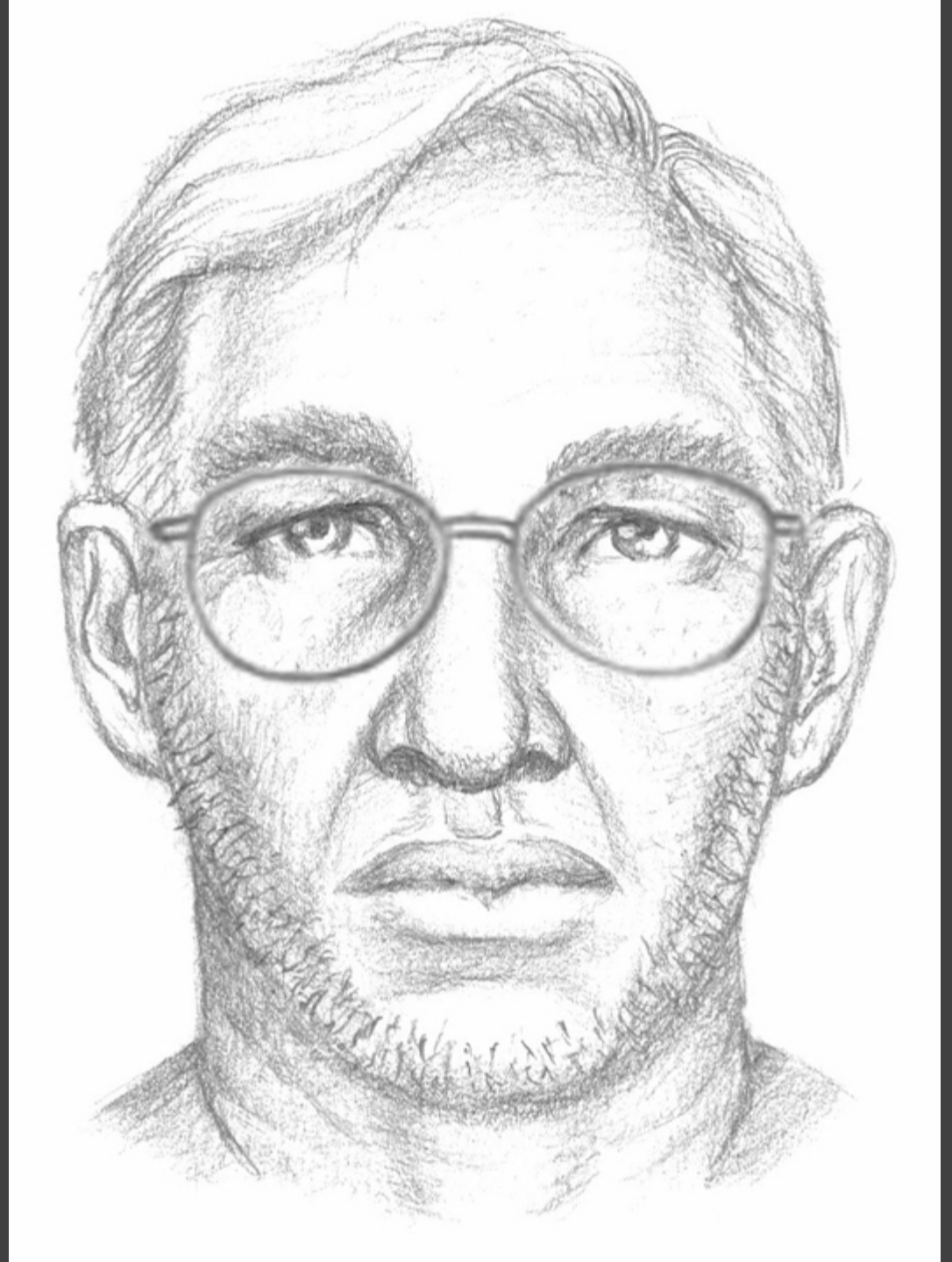
4:1	**3:1**	**3:1**	**3:1**
King County, WA	San Diego, CA	Pennsylvania	Los Angeles, CA
3:1	**5:1**	**2:1**	**2:1**
San Francisco, CA	Minnesota	Virginia	Hawaii



= 54% of U.S. adults


MY GAME



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Help
Dimensionality: Hundred Dimensional
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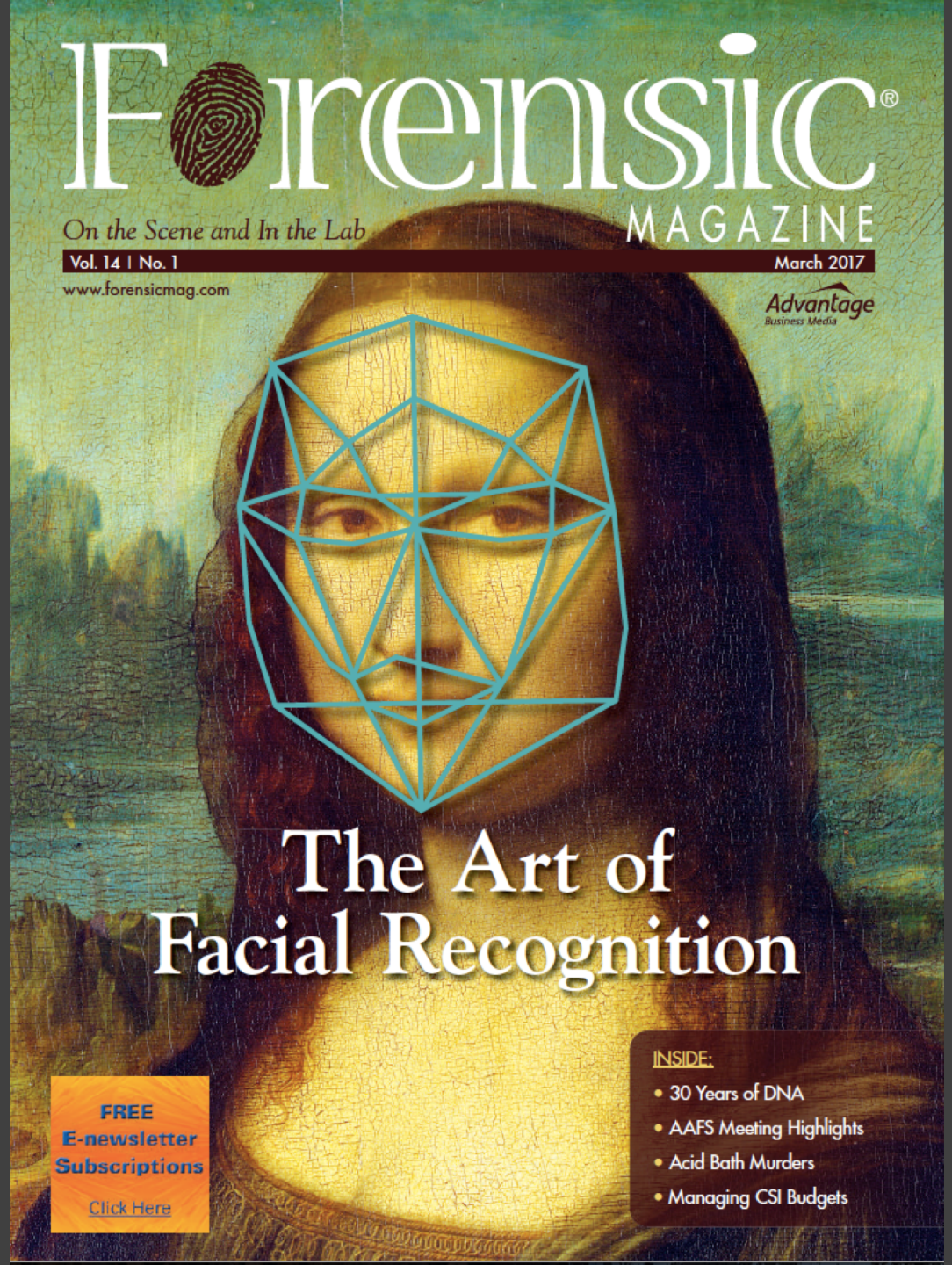
x:1 y:-2 z:0
Default
Clear All
2D -> 3D
3D manipulation: Left Mouse Button: rotate, Right Mouse Button: position, Middle Mouse Button: zoom



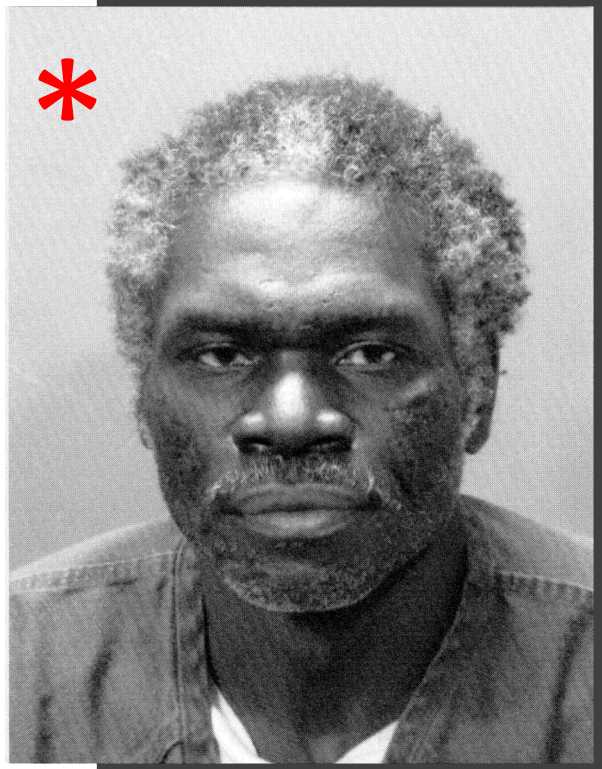
Rodriguez says image editing and enhancement is the breakthrough facial recognition technology was waiting for. With the NYPD, Rodriguez used primarily Photoshop to enhance images that included heavy pixilation, overexposure, poor lighting or subject pose, fisheye effects and more. Now, as the manager of image analytics with Vigilant Solutions, Rodriguez has created a platform that utilizes the company's own suite of enhancement tools, based on his previous experiences at the NYPD.

"Any end-user, even a novice, can go in and not be afraid to tackle images," Rodriguez explained. "We built the software tools to be very easy to use."

Art Meets Science

For example, the technique of graphically replacing closed eyes with a set of open eyes in a probe image has yielded hundreds if not thousands of returns, according to Rodriguez. This important yet simple enhancement technique changes the entire dynamic of the facial recognition search, as results would include only candidates with closed eyes if the image was not altered. The color of the eyes doesn't even need to match—just manually editing open eyes into the probe image allows the facial recognition algorithm to make proper measurements of the face.

10-11). She did not know the maximum number of stars a particular photo could have (Sec Supp R I 11). She testified, "I can't speak to the algorithms about how it puts one, two, three, four, five but it does from my understanding arrange the photos based on what's most likely to the photo that you uploaded" (Sec Supp R I 11). She testified that the program does not give percentages for its match determination (Sec Supp R I 10-11). She testified that she did not know how the computer program's algorithms worked (Sec Supp R I 11). At that point, she visually compared the photo of the drug seller to the photos generated by the computer program in the Duval County database as potential matches (Sec Supp R I 10). She determined that a photo of Appellant, which was the first photo in the list of potential matches, looked most like the drug seller (Sec Supp R I 10). Appellant's photo had a star underneath it (Sec Supp R I 11-12). She forwarded only Appellant's photo to the detective and told him that she thought Appellant was the drug seller (Sec Supp R I 10).



CHIEF OF DETECTIVES MEMO

NUMBER:	3	DATE:	March 27, 2012

Subject: **REAL TIME CRIME CENTER FACIAL IDENTIFICATION SECTION (FIS) NOTIFICATIONS**

FIS Possible Match – Real Time Crime Center Facial Identification Section (FIS) analyst determines that Subject is **POSSIBLY** the suspect whose image is depicted in the video and / or photograph regarding a crime. A FIS Possible Match does **NOT** constitute a positive identification and does **NOT** establish probable cause to arrest the Subject. Additional investigative steps **MUST** be performed in order to establish probable cause to arrest the Subject.

Subject – Person identified by FIS as **POSSIBLY** being the suspect whose image is depicted in the video and / or photograph regarding a crime.

Subsequently, [redacted] searched and identified the perpetrator through social media. On [redacted], [redacted] provided this information to the police. Detective Robert Maynard of the 67th Precinct Detective Squad submitted the photographs provided by this complainant to the NYPD's Real Time Crime Center Facial Identification Section (FIS) and obtained a match with the defendant. A confirmatory photographic identification was made by [redacted].

Detective Maynard issued an I-Card for the defendant, and he was apprehended by the Brooklyn South Warrant Squad on May 2, 2016. Defendant was placed in a line-up and identified by [redacted] as the perpetrator who robbed her on February 25, 2016. Thereafter, defendant was placed under arrest and made a statement to the police.

Subject – Person identified by FIS as POSSIBLY being the suspect whose image is depicted in the video and / or photograph regarding a crime.

12. After FIS software identified a set of look-a-likes, a technician reviewing all look-a-like photos determined that [redacted] photo "matched" the probe photo.

13. An NYPD officer texted [redacted] mug shot to the LPO and asked "is this the guy [redacted]" The LPO responded "that's the guy." ***See*** **Exhibit 2** *(screen shot of the text messages)*.[5]

Subject – Person identified by FIS as POSSIBLY being the suspect whose image is depicted in the video and / or photograph regarding a crime.

FBI: *“We’re pretty confident we’re going to have face [recognition] at positive ID in 2 to 3 years.”*

“I wouldn’t be surprised if we have to go through a Daubert hearing. So we have to have everything ready—studies, experts, etc. to show that it’s a positive ID.”

Bill McKinsey, Section Chief
Biometric Services Section, CJIS

In Your Face: China's all-seeing state

China has been building what it calls "the world's biggest camera surveillance network". Across the country, 170 million CCTV cameras are already in place and an estimated 400 million new ones will be installed in the next three years.

Many of the cameras are fitted with artificial intelligence, including facial recognition technology. The BBC's John Sudworth has been given rare access to one of the new hi-tech police control rooms.

Producer: Joyce Liu. Camera: Wang Xiqing.

10 Dec 2017 | China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Thank you